Business Rules:

* Cory should be on when the car starts.
* Cory should detect if the driver is going over the speed limit and advise the driver to decelerate.
* Cory should detect if there is a car in front that is too close to the driver and advise the driver to decelerate.
* Cory should detect if the driver is steering into another lane and advise them to steer back into their lane.
* Cory should detect if there are cars that are too close to the sides of the car and advise them to steer left or right accordingly.
* Cory will detect if the visibility outside is too low and will advise the driver to pull over if the visibility is below safe conditions.

States:

|  |  |  |
| --- | --- | --- |
| Abbreviation | Expanded Form | Meaning |
| S | Start | Cory software is on (Start state). |
| DEC | Decelerate | Cory tells the driver to decelerate the car. |
| SL | Steer Left | Cory tells the driver to steer left within the lane. |
| SR | Steer Right | Cory tells the driver to steer right within the lane. |
| PO | Pull Over | Cory tells the driver to pull over. |

Transitions:

|  |  |
| --- | --- |
| Inputs | Output |
| AS: Above speed limit | D: Decelerate message |
| FC: Front car too close | SLL: Steer left while staying in line message |
| STL: Steering too far left | SRL: Steer right while staying in line message |
| STR: Steering too far right | POS: Pull over to side message |
| LC: Left car too close | -: No message |
| RC: Right car too close | A: Accelerate message |
| VL: Visibility too low |  |
| CNS: Car not stopped |  |

* Start (S)
  + If the car is going over the speed limit, go to DEC state.
  + If there is a car too close in front of the car, go to DEC state.
  + If the car is steering towards the left lane, go to SR state.
  + If the car is steering towards the right lane, go to SL state.
  + If there is a car too close on the left side of the car, go to SR state.
  + If there is a car too close on the right side of the car, go to SL state.
  + If the visibility is too low, go to PO state.
* Decelerate (DEC)
  + If the car is still over the speed limit, stay in DEC state.
  + If the car in front is still too close, stay in DEC state.
  + Else, go back to S state.
* Steer Left (SL)
  + If the car is still steering towards the right, stay in SL state.
  + If the car on the right is still too close, stay in SL state.
  + Else, go back to S state.
* Steer Right (SR)
  + If the car is still steering towards the left, stay in SR state.
  + If the car on the left is still too close, stay in SR state.
  + Else, go back to S state.
* Pull Over (PO)
  + If the car has not pulled over and visibility is still too low, stay in PO state.
  + Else, go back to S state.

Finite State Machine: